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ABSTRACT

Using computers to produce art began with scientists, mathematicians, and individuals with strong technical backgrounds who used the graphic material as visualizations of data in technical fields. People are using computer art in advertising, as well as in painting; sculpture; music; textile, product, industrial, and interior design; architecture; city planning; concrete poetry; dance; theatre lighting; and animation and cartooning. Several computer output devices produce different kinds of visuals, some of the most common of which are the line printer (prints letters, dots, lines, and so forth in various shades and densities), the CalComp plotter (computer-driven vertically moving drum), the cathode-ray-tube (electric beam deflected across a screen which allows for interaction in real time), and Dicomed Image Recorder (digitizes transparencies so that sections can be manipulated separately). There is great potential for computer graphics in advertising; computer animation is highly flexible for commercial purposes and cuts the time for conventional animation from several weeks to a couple of days. (TJ)

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COMPUTER ART - A NEW TOOL IN ADVERTISING GRAPHICS

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Computer Art - a new tool in Advertising Graphics

Before I started writing this paper I visited the Special Interactive Computation Laboratory, a special division of the University of Minnesota Computer Center on the Minneapolis campus. This Laboratory houses some of the most interesting visual output devices. The purpose of my visit was to update my knowledge on the most recently obtained computer output facilities. One of them is the Dicomed System. (I will explain it in more detail later). I noticed a huge posterboard with samples of well organized and neatly labeled applications. The headings for each field of application were: computer generated slides, bar charts, text slides, edge detection, sharpening images, false coloring, pixel stretching, areal and satelite maps, topographical maps, and - art. I just had to chuckle and could not help making a cynical comment: "Oh, you really have a category for ART."
Maybe, this episode can only be understood by "insiders," but I am using it as an opening anecdote because it takes us right into the heart of the problem: what is the state of art in applied computer art ?

Before I outline some possible commercial applications of computer art in advertising, let me give you a brief history of computer art and some background information and thoughts. These will provide you with the right insight into this highly controversial matter.

Probably, some of you have already seen computer-generated art and may immediately remember the Snoopy pictures, unfortunately. Those of you who have just heard about computer art probably think of the kind of picture that is spit out by the computer after a simple push-button operation. Well, it is not all that simple. The Snoopy pictures represent only some of the very first attempts to use the computer for picture processing. Today, computer art has become a more sophisticated form of design which perhaps most of us do not even know. I would never blame anyone for this lack of information because: 1. computer art is a very young form of art, 2. there is a certain hostility against computers in general, 3. its development and acceptance has been suppressed. There are several reasons for this: artists as well as non-artists are still fighting over the argument whether or not computer art is art; there is a common suspicion against machine-produced versus hand-made art work; art galleries are reluctant to show computer art because they are uncertain whether it is just another short-lived fad or a promising new trend; artists face great difficulties in getting access to computers and in learning the necessary programming operations; some are fighting computer art because they fear that it may, some day, replace traditional art tools.

Computer art was born as a by-product of the electronic data processing. Computers were first commercially available around 1950. Ten years later, William Fetter from the Boeing Airplane Company coined the term "Computer Graphics." He created an extensive series of computer-generated drawings to determine the most

efficient design of an airplane cockpit. He also produced programs to simulate what a pilot would see if he were approaching a runway and landing a plane. The first computer-generated images were used for purely utilitarian purposes. Yet, their aesthetic aspects were striking. Some of these pictures also won awards.

Michael Noll from the Bell Telephone Laboratories got involved in computer graphics by accident. One day his microfilm plotter went wrong and produced an unusual and intriguing design. He was attracted by its beauty and developed an interest in the enormous possibilities and non-utilitarian applications of computer graphics.

The first practitioners of computer art were scientists, mathematicians, and individuals with strong technical backgrounds. Consequently, the works of early computer art were merely visualizations of data used in the technical fields of computer science and other sciences like chemistry, physics, mathematics, biology, and medicine.

It was not until 1968 that computer art was officially introduced to the public during the international "Cybernetic Serendipity" exhibition in London, England. For the first time, all the pioneers of computer art were represented by their work. But take note: among the participants only three had approached the computer as another potential tool for the serious artist. For them, the designs were not by-products of tasks but ends in themselves. This exhibition triggered an immediate world-wide response from artists, scientists, and the general public.

During the following "transition" period more artists became interested in using the computer as a creative tool for producing visual output. Some started collaborating with computer programmers while braver souls actually learned programming and worked alone. Eventually, a new breed of artists emerged: those who combined training in the fine arts with knowledge of and experimentation with computers. I myself fall into this latter category. Some of these new "computer artists," defected from the manual arts, embraced the interdisciplinary areas of art and technology. The results have been highly varied media experimentations and highly diversified styles and products.

June, 1976, marked another milestone in the history of computer art. An international computer art exhibition was shown in conjunction with the national computer science conference in New York City. The exhibited works documented a new direction. Where at one time the printout represented the final art work, computer graphics taken from the output devices were now used as intermediate products. Photography, diverse printing techniques, and creative experimentation with traditional and newly developed materials augmented the raw computer output to create the final design and produce the finished work. My computer art work, which I was asked to show at the exhibit, is evidence of that same trend.

Let me show you some of the most common computer output devices to give you an idea of the different kinds of visuals that a designer can work with.

1. The simplest output device, and therefore the first ever used

for visual images, is the ordinary line printer. With the repertoire of the letters from the alphabet, numericals, and punctuations it can print lines and shapes of various shades and densities. Besides black there are now three color ribbons available. Designs may be printed continuously; they are, however, restricted to the standard computer paper of 15 inches width. There is a variety of other kinds of printers which can produce patterns with dots, lines, or any other visual symbols. For example, a photograph or real object may be reproduced by means of tiny graphic symbols to represent the different gray shades.

2. The CalComp plotter. This is a computer-driven mechanical drawing machine which produces original line drawings in ink on paper. The artist may choose from a variety of color inks, size of pen to define the thickness of the lines, and size of paper which is usually 12 inches or 30 inches wide and up to 100 feet long. The pen is similar to a regular technical pen. It moves along a horizontal rod and draws on paper rolled on a vertically moving drum. Each line is composed of very small steps which are visible when the drawing is closely examined. Each step corresponds to a specific instruction conveyed to the plotter from a magnetic tape. These drawing instructions are transferred to the tape from information coded onto punched key-cards, or by direct input via keyboard.
3. A much more flexible method is a cathode-ray-tube (CRT) or TV-tube. Graphics are produced with an electron beam, electrically deflected across a phosphorescent screen. For the input

you can use a keyboard or an attached "light pen." This electronic pen allows you to draw directly on the screen to influence the design or to select drawing commands. This process eliminates the tasks of writing a program each time, punching it on cards, feeding them into the computer, or typing the program in via keyboard.

The CRT is an interactive device, allowing direct interaction and communication with the computer. The interaction in done in real-time, which means that there is almost no time lapse between input/question and feedback/answer. Video or movie cameras may be used to record the dynamic motion picture. An animation camera, or any other conventional picture-taking device may be used to photograph the images in various stages of movement. Thus you may obtain static graphics from the enlargements.

4. The Dicomed Image Recorder. This device digitizes either color or black and white 35mm transparencies. From that digitized information it produces color or black and white slides (35mm) or Polaroid prints (3.5 by 5 inches). Digitizing is the Process of assigning a numeric value to represent the light intensity within each of a predefined set of grid areas, called pixels. The number of pixels in a given area, that is, the "resolution," define the sharpness of an image. After digitizing an original photograph, sections may be selected and manipulated separately. You may enlarge or reduce, stretch or condense, or otherwise distort parts or the whole of the original picture.

If you have a photo that is out of focus, you can also enhance its resolution and thus improve its sharpness.
A color TV may be attached to the Dicomed. This allows you to view intermediate or final results of digital image processing operations before producing a hard copy. A track-ball allows interactive use of the monitor through a positionable cursor.

You probably think by now that I must be some kind of computer scientist. I am not. By background I am an artist. I have received a thourough education in Fine Arts and Applied Arts in Germany. Around 1970, I became interested in the possibilities of using the computer. I was stuck with a design problem which I had visualized in my mind but could not possibly execute by hand or with the help of any conventional art tool.
In 1975, at the University of Minnesota, I was offered to use the computer facilities for design purposes. Theoretically, I knew almost everything about computer-generated art, but I had no idea how to actually do it. Step by step, I learned how to talk to the computer and how to have the computer talk back to me. An artist taught me these skills. She was then professor in sculpture and internationally known as one of the pioneers in computer art: Katherine Nash. With her tailored instructions and patience, I was soon able to use the computer as an extension of my artistic expression. I learned to use it as a tool for me to control the act of creation. I was intrigued by the potential of this industrious tool although I could only vaguely imagine its scope.

An artist who wants to use the computer only for making art cannot expect to find much help or support from computer scientists. They do not consider art and design a seriuos application. On the other hand, the visual output facilities are not efficiently and creatively used.

Kathy and I fought strongly for the idea to make computers accessible to artists and non-computer scientists who were interested in using them for producing design work. Often we were not taken seriously, but eventually we received some isolated support from people within and outside the Studio Arts department. We are now offering a course in computer art; it requires no background in mathematics or programming. The students learn to use the computer as an artistic tool in any field of the visual arts.

Soon after I started working with the computer, I began to explore the applicability of computer graphics in advertising. Being a freelance commercial artist, I was eager for the opportunity to apply my new ideas. As soon as I was proficient enough to handle the technical part of creating computer graphics, I decided to shift my emphasis away from the arts - to the applied arts and functional design. Whenever feasable, I integrated my computer graphics into advertising assignments. These included cover designs for brochures and educational publications and some logo designs. It was interesting to watch the reactions of the clients who were not yet used to seeing these kinds of visuals. First, they were very reserved, insecure, and hesitant. Then, a chain reaction of positive feedback started, initiated by the consumers and carried over to the clients and further on to the

competitors. The result was that new clients hired me for new jobs with the particular assignment to use computer graphics in my designs.

Now you may ask: "what is the state of computer art in advertising in general?" If we look around and analyze print and TV advertising, we may, in fact, find quite a few examples where the computer is used as an aid for visual output. Of course, the computer has been used for quite some time in advertising, in the print media as well as in broadcasting, but mostly as an "invisible helping hand:" in typesetting, editing, layout, page make-up, to mention only a few. The visible, visual, and creative use of computer graphics, however, is still in its infancy.

Let me give a short list of other areas in which the creative and visual use of computers is already well established and used commercially. This may provide you with some better insight into the applicability of computers in the arts and humanities.
Music was probably the first art accessible to computers. Through its strict, formally definable organization and the abstract regularity of its harmonic laws, it is naturally fit for programming and the use of random numbers. It is said that Mozart used random number variables for the composition of some waltzes based on "diced" notes.
Other fields of application are: painting, sculpture; textile design, product design, industrial design, interior design; architecture, city planning; concrete poetry; dance, theatre lighting, choreography; animantion, cartooning.

There is a great potential for computer graphics in advertising. Almost any of the above mentioned areas lends itself to being integrated in advertising, be it in the print media as a static form or in the broadcast media as a dynamic design.
Quite a few TV commercials that we see every day have been computer-generated. We probably do not even know that computers were involved in the creation and production. Sometimes it is very difficult to identify a computer-generated commercial.
The utilization of computer animation in commercials is almost ideal. You probably remember having seen some of its more distinguishable effects where a company's logo or just letters will jump across the TV screen, scramble, rotate, explode, and then all of a sudden, rush together to form a word.
Two pioneers in bringing electronic applications to animation in advertising are Computer Image Corporation in Denver, Colorado and Dolphic Productions Inc. in New York City. Both are using the Scanimate animation system to produce TV commercials and TV I.D.'s. The Scanimate is also in operation at Image West in Hollywood and at Far East Laboratories in Tokyo.
The Scanimate is an an analog computer designed to handle visual (analog) rather than numerical (digital) data. The input can be a piece of flat art work as well as a three dimensional object or a live subject. The original object is picked up by camera and fed into the computer. It is immediately registered on high resolution CRT. The image is then divided into several sections, each of which can then be manipulated independently from each other. Aspects of manipulation are, e.g., position, width, length,

depth, vanishing point, brightness. Actual programming is then needed to define each section's final and initial position. Each section can then be made to move from one position to another at any selected speed. The most basic tool is a set of eight oscillators. With these, you can make an object turn into multiple images of itself, vibrate, wave, jump, reduce to a point, turn inside out, change colors, or turn into a complex abstraction. All objects can move in three dimensions. Once programmed, the computer can run through the entire animation sequence by itself to allow editing. The animation can then be stored on either film or Video tape. At this point, during the developing process, color is added.

The limitations of Scanimate gave grounds for a new more complex computer animation system to be designed: CAESAR (Compur Animated Episodes through Signal Access Rotation) became the third generation system.[1] It operates with visual as well as numerical data. CAESAR provides a real-time solution to the hidden line problem and is thus capable of producing conventional character animation. It makes it possible for a character to move its hand in front of its face without producing image interference where two sections overlap. CAESAR enables precise timing, positioning of the animation, and lip synchronization. Seven different mouth shapes can be used at the times specified by the sound track.

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[1] Scanimate is the second generation, Animac the first generation system. The programmability and image quality of Animac were not adequate for wide commercial use. Computer Image Corporation holds patents on the Animac, Scanimate, and CAESAR systems.

Preparation procedures of a computer animated TV commercial are similar to those of a conventional animation commercial. The agency presents a story board and a script to the animation artist staff. Design elements are taken from the board and translated into computer animation technique. Upon approval by the client, production can be finished sometimes within one day.

With conventional animation several weeks are needed to complete a 30 second commercial. Electronic animation has enabled us to reduce the production time to a couple of days.

What a progress! Yet, we are still at the beginning. Anyone who uses computers for other applications than mere data processing in a scientific sense--be it for art, advertising, dance--be it in the U.S., in Germany, or in Japan, this person is still a pioneer.

I think this is a very exciting time to live in: we get to participate in exploring the creative potential of computers in the field of visual communication.

Appendix

A visual presentation of approximately 60 slides goes along with this paper to back up the content. The slides will show examples of all areas and aspects of computer-generated design, computer facilities, program systems, and applications to which I refer in my paper.

I will also have a small number of computer produced commercials, video tapes and film strips of applied computer graphics in advertising. These samples could be shown either as introduction to the paper or, following the presentation, during the question and answer period. In case I receive a greater number of samples, we could, maybe, show them in combination with some other program events during the convention.

Write-ups of particular computer programs that we are using at the University of Minnesota can be mailed to interested members of the convention upon request.

Information about the Animac, Scanimate, and CAESAR systems can be requested at :

Computer Image Corporation
2475 West 2nd Avenue
Denver, Colorado 80223
(303) 934-5801

Dolphin Productions Inc.
140 East 80th Street
New York, N.Y. 10021
(212) 628-5930

BIBLIOGRAPHY

Articles

"Scanimate Animation System." published handout, Computer Image Corp.

"Computer Animation: TV production gets a whole new image." published handout, Computer Image Corp.

"Operation of the Scanimate System." unpublished handout, Dolphin Productions Inc.

E.J.Tajchman. "The Incredible Electronic Animation machine." Videography, November 1977, pp. 22-24.

Books

Franke, Herbert W. Computer Graphics - Computer Art. London:Phaidon Press Ltd., 1971.

Leavitt, Ruth. Artist and Computer. New York: Creative Computing Press, 1976

Reichardt, Jasia. Cybernetic Serendipity. London/New York: Praeger Publishers Inc., 1968/69

Reichardt, Jasia. The Computer in Art. London: Studio Vista, 1971.